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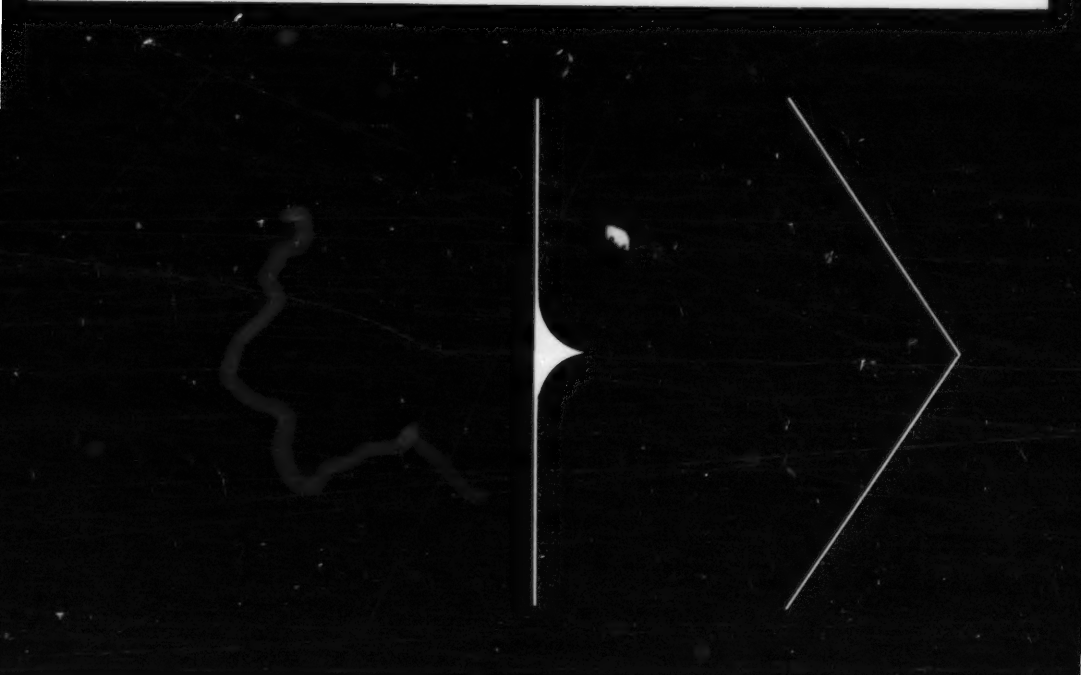

THE EXURBANIZATION OF PORT FACILITIES: LOCATION CONDITIONS AND RELOCATION PROBLEMS

RESEARCH REPORT NO. 81

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Author's Note

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INTRODUCTION

It is commonly assumed that ports belong in urban areas, and that the destinies of each are inextricably intertwined. Urban residents in port cities have become accustomed to having their waterfront occupied by grain silos, docking areas, storage sheds, railway tracks and the like; the port is considered to be a source of prosperity. Port managers have frequently seen ports as the bastions of civic pride; they are the city's window on the wider world of trade and commerce and claim a "rightful place" in the city's midst.

The scene is changing rapidly. The urban waterfront has become a resource of increasing value to the urban community. Demands for access to the water body are being voiced, and the general dereliction of many waterfront areas is being seen for what it is - the best example of industrial slum property. The once unacceptable idea that the port move out so that the urban waterfront can take its place in society is gaining momentum, though slowly. This may be surprising to some since the possession of the urban shoreline seems to be the acquired and inalienable right of that august and unapproachable body, the local port authority.

But history shows that the port is, in fact, a mobile creature, even if port authorities don't like the idea. Major ports such as Rotterdam, Antwerp, London, New York, Montréal, Vancouver, Seattle, and many others have grown, expanded, and shifted their centre of operations. Some, on rivers, have gravitated downstream. Others, begun in areas with difficult terrain many decades or centuries ago, have migrated to flatter estuarine and delta locations. The evolution has been sporadic, not always deliberate, and normally imperceptible.

Because this migration has been at rates which are considerably less rapid than for other sectors, the impression is given that ports are monolithic, non-adaptive, and insensitive to other elements of the urban system. Many port cities do indeed owe their existence to their port, but most have progressed beyond this dependence and have developed a momentum of their own. The difference in momentum between port and cities, combined with a rapid change in urban values, has contributed to, if not created, many of the difficulties associated with recent port growth.

Perhaps the problem lies in the lack of graciousness of port authorities in the past. As the port evolved, it acquired more land, expanded its boundaries, and consumed even more of the precious urban shoreline, without necessarily ceding the properties it already had. Of course, the port has good friends - the railway companies; together they form a formidable duo which has had probably more effect on some Canadian cities than any other set of institutions. However, land secession has commenced, and in the last few years imaginative redevelopment schemes for downtown port and railway land have begun in Halifax, Charlottetown, Saint John, Montréal, Toronto, and Vancouver. Some would argue that they are too little, too late. Others point out that they are at least "a foot in the door" and will lead to a wider emancipation of the urban shoreline.

"The port" is in a vulnerable position, not only because of its past lack of sensitivity but also because it is frequently hamstrung by a mandate and regulations which give it little leeway to respond to new situations. Growth and change have always tended to be by accretion - new facilities being constructed in an ad hoc fashion, and only in response to

actual or supposed operational requirements. Port planning has traditionally been myopic - a vision which ends at the port's gates and which is related to an empire unrelated to the surrounding urban area. It is only with reluctance that a possible relocation of facilities is admitted. This attitude has been bolstered by many studies which help to underline each port's feeling of uniqueness, and which praise the status quo. As though status were anything to quo about.

But there are circumstances and conditions which might suggest that the locational stability of port facilities is doubtful. Some of these conditions arise because of the changing nature of port operations and others because of the changing pattern of interdependencies between port and urban areas. It is the purpose of the following sections of this report to outline these conditions and to comment on them. It will be concluded that, within certain limits of the viability of existing investment, the relocation of a variety of port facilities is logical. This may promote the opening up of the urban waterfront - but where will the facilities be relocated? The obvious answer is: a "green-field" site away from the urban waterfront. But this too poses problems which are not dissimilar to the ones which exist within the urban area. This irony of development will be expanded upon, using the case of the Roberts Bank (Vancouver) bulk-loading coal facility and the proposal to expand the coal operation and add other facilities. The case is illustrative of what happens when the port empire is put face-to-face with the very environmental and social questions which it has long ignored. It would be interesting to speculate on the results of applying the types of reasoning used by contributors to the Roberts Bank debate to all the existing facilities operated by major ports.

The second example to be presented will be Gros-Cacouna (Quebec) - a virtually undeveloped site, and one where all but the most recent attempts to create port facilities have ended in frustration. If the story of Roberts Bank is recent, the case of Gros-Cacouna is steeped in the history of eastern Canada. It is in direct contrast to Roberts Bank, and Vancouver in general - a green-field site far from major centres, but close to trans-Canada transport systems, and one where environmental concerns have rarely arisen. If Roberts Bank is a group of cargos looking for a port, Gros-Cacouna has always been a port seeking a cargo. As will be seen, the irony is that one kind of product effectively disallowed from being shipped from Roberts Bank may well be the saviour of Gros-Cacouna's aspirations - liquid natural gas.

LOCATION AND RELOCATION PRESSURES[1]

Technological change has affected most aspects of life and society, as well as the industrial system. Ports in Canada are no exception. In many ways the modern port has only one thing in common with its historic counterpart, and that is the movement of merchandise and its transhipment between land and water modes of transport. There the likeness stops. The gangs of stevedores unloading cargo by hand have been displaced by machinery which is more efficient and less time-consuming. And the hustle, bustle, and confusion associated with ports has given way to a more programmed and automated set of procedures. Some would argue that the excitement associated with port operations has also disappeared. Many wouldn't even notice.

New technologies do not appear by themselves but rather as a result of certain economic and operational pressures. In the case of ports the causes of change are several. First of all, there has been a rapid growth, in Canada at least, in the shipment of bulk cargos both wet and dry. This has meant not only the need for rapid loading and unloading of one product, but also the provision of port facilities which have only one use. Grain silos and petroleum storage units cannot be interchanged, nor can they be used for general cargo purposes. This shift in commodity structures has been further compounded by the advent of unitised cargo-handling methods such as containers, pallets, and roll-on roll-off (RORO) systems. The

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[1] This section is based on: Harrison, P. (ed. and contributor), The Urban Waterfront: Growth and Change in Canadian Port Cities (Ottawa: Ministry of State for Urban Affairs, 1978), especially pp. 1-37.

demise of the traditional form of "general cargo" is by no means complete - especially in coastwise and domestic traffic - but its absolute and relative importance have declined dramatically. The result is less need for the sorting and storing areas and wharfage provided by many ports, a fact which has led to the wholesale abandonment of out-dated facilities.

A second force for change is the evolution in shipping technology and economics.[2] All-purpose liners are gradually being replaced by specialised single commodity vessels such as oil tankers, grain carriers, liquid natural gas vessels, container ships and the like. Changing commodity types have promoted this change, but so too has on-board economics. Rising labour costs, even for vessels flying under "flags of convenience", have forced a greater reliance on capital equipment. This has been complemented by economies of scale in the building and operation of the vessels. Larger vessels can move cargos at lower unit cost than can smaller vessels, simply because certain costs, including labour and fuel costs, do not increase in direct proportion to vessel size. This shift towards larger vessels means that a given quantity of cargo can be moved by fewer vessels. Increasing fuel costs may, however, give rise to a "ceiling" on vessel size as shipowners substitute manpower for equipment and reduce vessel speed at sea. As with any mode of transport, a ship is most

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[2] Couper, A.D., The Geography of Sea Transport (Toronto: Toronto University Press, 1972); Mayer, H., "Some Geographic Aspects of Technological Change in Maritime Transport", Economic Geography, Vol. 49 (1973), pp. 145-155. Robinson, R., "Changing Shipping Technology and the Spatial Adjustment of Port Functions", Tijdschrift voor Economische en Sociale Geografie, Vol. 62 (1971), pp. 157-170.

economical when it is actually moving cargo, and not when it is lying idle in its berth. Certain costs continue while a ship is in port, including labour, depreciation, and insurance costs, and are added to by berthage and service fees paid to the port authority. There is thus a definite incentive to have the most rapid "turn-around time" possible. With fewer ships calling, and these for shorter and shorter periods of time, it is no wonder that some ports look deserted.

The impact of economic and technological change on the port can be seen both in the increasing specialization of facilities and in the amount of land being used by newer operations. Bulk loading and unloading facilities, container terminals and the like require extensive amounts of load-bearing flat land simply because the commodities in question need to be assembled in one place for rapid loading and unloading. In the case of container shipments, for example, the containers to be loaded need to be stacked in proper sequence ready to be moved, and sufficient land must also be left free for the in-coming shipment.[3] In some ways the pressure for rapid turn-around of vessels has led to the substitution of land-related costs for ones which used to be ship-related. The mechanization of the loading and unloading procedures, necessary because of the quantities of cargo involved as well as the need for quick turn-around, has also led to the replacement of the traditional port labour force.

Specialization of port facilities and of ships has also reduced another traditional pattern of port operations, and

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[3] Johnson, K.M., & Garnett, H.C., The Economics of Containerisation (London: George Allen & Unwin, 1971).

that is the "multiple stop" phenomenon. Ships would move from berth to berth within the port picking up different cargoes, or alternatively, the commodities themselves would be transferred between the sheds.[4] With single-purpose or limited-purpose transport this is less and less the case. One-stop loading and unloading is becoming the norm and internal "linkages" within the port are disappearing. A ship arrives at a grain terminal, is loaded, and leaves - all without any reference to whatever else is going on in the port. Certain common services such as bunkering, food supplies and security may be shared with other port operations, but even these may be specific to the particular facility.

Because of changing technological and economic factors and the resultant reduction in internal linkages, the modern port is no longer a "unitary" kind of activity in which all operations have a certain level of interdependence. It is more an amalgam of different activities going on in close proximity. The analogy could be made with an industrial park devoted to manufacturing. The activities in the park belong to the same sector, have similar vocations, and all use some commonly accessible services. But the way in which each activity functions may be totally separate from all the others. The modern port is no more than a "transportation park" presided over by a co-ordinating body known as the port authority.

The argument that the unitary port, one made up of interdependent facilities, exists no more has some very important

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[4] For greater detail in the case of Montreal see: Slack, B., Harbour Redevelopment in Canada (Ottawa: Ministry of State for Urban Affairs, Paper A-75-2, 1975).

implications. It means that the choice of location of each facility can be completely independent of the location of all the other facilities, and that the need to be all together in one place no longer exists. Shoreline locations other than inside an urban area become a distinct possibility, at least for some facilities. This is especially the case for land-intensive activities such as container ports, coal ports, and tank farms, where sufficient land may not exist within the urban area without resorting to the dubious practice of land-filling. In short, the very evolution of port operations, because of the pressures outlined above, creates the initial conditions for the exurbanization of certain port facilities - i.e., the movement to areas completely away from the traditional urban location of the port.

Port-Urban Relationships

The interdependence between ports and their surrounding urban areas has also been waning in recent years.[5] In some cases the "tributary area" of the port has grown to include regions far distant. Imported products are immediately shipped through the urban area rather than to it, and exports have their origin in a wide variety of places. There is thus no strong correlation between the economic activity of a given urban area and the quantity of merchandise handled by its

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[5] Britton, J.H., "External Relations of Seaports", Tijdschrift voor Economische en Sociale Geografie, Vol. 56 (1965), pp. 109-112. Weigend, G.C., "The Problem of Hinterland and Foreland as Illustrated by the Port of Hamburg", Economic Geography, Vol. 32 (1956), pp. 1-16. Robinson, R., "The Hinterland-Foreland Continuum: Concept and Methodology", The Professional Geographer, Vol. 22 (1970), pp. 307-310.

local port. In other cases the location of commodity-generating and -receiving units within the local area has also shifted as manufacturing and service activities have become suburbanized. The growth in bulk commodities such as grain, petroleum, mined products and forest products has also contributed to a decline in port-urban interdependence, as has the concentration in certain parts of the activity which used to take place elsewhere.

The linkages between a port and its surrounding urban area are not always in terms of commodity flows. They also include the purchase of goods and services from the local community. Such things as fuel, food, ship repairs, and ship equipment can provide local employment and also create multiplier effects within the local economy. However, as port throughput increases these purchases do not necessarily increase proportionately, especially, as noted above, because the number of vessel visits does not increase automatically. It should also be noted that certain services, such as dry-docks, are located in very specific places in the general port area, and in order to use them, vessels need to be taken to the facility in question. Moving certain port facilities away from the urban area would not be an inconvenience in this regard simply because the only problem would be that of an increase in the distance to be travelled to acquire the service. Other purchases, especially of food, supplies, and sundry services, can also be made within a large radius of the adjacent urban area and do not require close proximity to their place of production.

Perhaps the major linkage between port and urban area, in both an economic and political sense, is the manpower required to operate the port. But as has been noted, even this

is declining as ports become mechanized. Nor is it certain that a downtown location is convenient for the more specialized labour force now employed - which may have become more and more suburbanized over the years.

The need for an urban location of the port is thus more questionable than ever. Certain facilities, it is true, may still have some strong links - especially those involved in general cargo shipments and coastwise traffic. The majority of newer port functions, however, have reduced these ties to a minimum. Even the communications between port office and particular installations and between shipping office and ship are being performed mechanically rather than by face-to-face contact. Even a location near "head office" has less meaning that it used to.

It is not being argued here that ports have no benefits for the surrounding urban area. What is being suggested is that these benefits are declining to a point where they cease to affect significantly the location and functioning of the port. Why then are Canada's major ports still tied to urban locations? The answer may be that locational inertia has set in. Investments made over the years need to be amortized over a sufficient length of time and thus relocation becomes difficult. In addition, new facilities continue to be built on land already under the jurisdiction of the port authority. This reduces the need to acquire new sites and to go through the process of having new facilities approved by agencies other than the port authority. Finally, as will be discussed in later sections, non-urban sites pose major problems of acceptability for reasons, such as environmental sensitivity, which the ports have rarely had to face before.

Port-urban relationships have another dimension, one that is distinctly negative. Port facilities have tended to close off the urban waterfront to residents of the local community. The traffic generated by the port has contributed to urban congestion, and the railroad links have for many years disrupted urban travel patterns. Around the port has developed a "twilight" zone of dubious industrial and commercial development, much of which ceased to be related to port operations a long time ago. This "dockland", it is true, is frequently outside the port's jurisdiction. It is a spillover effect which has resulted in vast amounts of urban decay. Add to this the noise, dirt, and general nuisance created by port operations and the reality can be seen to be somewhat less romantic than the general perception would admit. The cruel irony is that much of this is happening on what would normally be both prime real-estate and an area of high aesthetic value. It is not surprising that urban waterfront redevelopment is becoming synonymous, in many places, with downtown urban renewal and revitalization.

Any change in urban waterfront land uses implies vast alterations in institutional structure and perceptions. It also means that certain port operations need to be moved away completely from their current locations. But where will they go?

The obvious solution would be to identify those port facilities which do not have or require strong links with the urban area. Bulk loading and unloading facilities whose cargoes are shipped through the port, though they neither originate nor end up in the local urban area, would fall into this category. Once identified, and given favourable conditions concerning the value of investment in existing facilities,

these could be shifted out to "green-field" sites well away from the urban area. Traffic to and from the new facility would by-pass the urban population entirely and "dockland" could be avoided either by the installation of industrial parks or by the installation of "buffer zones" around the new facility.

The problems of urban ports are clear, and the possibility of relocation is certain. Unfortunately, the proposed solution is by no means optimal simply because the very creation of an "exurban port" creates problems of its own. Prime agricultural land may need to be acquired, farm-holdings can be disrupted by new transportation links, and the environment may suffer because of needed land-fill operations. Clearly the avoidance of one set of problems may result in another set which affects a very different group of people and involves interests of a different kind.

Exurbanization of port facilities has taken place in various port cities in Canada, most notably in Vancouver with the development of the Roberts Bank bulk-loading facility. The approach would appear logical based on the discussion presented here. Some would argue that it should be more widespread. It is useful, however, to consider the difficulties which arise as a result of the location pattern suggested. For this reason, the following section will discuss in detail the case of the controversy which exploded over proposals to expand the Roberts Bank (Vancouver) facility and the trade-offs which were involved in the final decision.

EXURBANIZATION: THE CASE OF ROBERTS BANK (VANCOUVER)[6]

On August 29, 1980, the federal Minister of Transport (Jean-Luc Pépin), the British Columbia Minister of Industry and Small Business Development (Don Phillips), and the B.C. Minister of Lands, Parks and Housing (Jim Chabot) announced the beginning of a major expansion project for the Roberts Bank superport facility 40 km south of Vancouver. The objective is to increase the coal-handling capacity of the facility from 10 million tons to 40 million tons per year. The agreement signed by the ministers, and by a representative of the federal cabinet (Senator Ray Perrault), was hailed as a "historic agreement" and a "very important port project". That may be so, but it also spelled the end to an extensive controversy over the whole issue of locating major transhipment facilities outside the traditional port area of Vancouver. The agreement is a compromise - not all the originally proposed expansion will take place, but it will be more than is deemed desirable by some groups in society.

Expansion Proposals

The Roberts Bank case is an interesting story. It begins in the early 1960's in response to the massive growth experienced by the port of Vancouver in postwar years. In 1966 the port extended its boundaries outward from the urban area to include the Fraser delta, thus providing it with room to expand. The port, however, is a National Harbours Board (NHB) port which comes under federal jurisdiction. The province of

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[6] This section is based on work performed by Kathleen Beattie.

British Columbia felt that the response by the NHB to local needs was, despite the boundary extension, somewhat less rapid than desirable. Thus, in 1967 B.C. created its own Crown corporation, the British Columbia Harbours Board, which was given the job of promoting port and harbour development in the province. More specifically, it was to attempt to promote the proposed bulk-loading facility at Roberts Bank by reclaiming the necessary land (Figure 1).[7]

By 1970 the NHB had taken control of the project and the new port at Roberts Bank began operation as a bulk-handling terminal for the export of coal and petroleum coke. The initial phase of development, consisting of a 20-hectare landfill, linked to the mainland by a 5-kilometre causeway serviced by railway tracks, cost $6.2 million. The terminal was built specifically for Kaiser Resources Ltd. to export by contract 75 million long tons of coal to Nippon Kohan K.K. of Japan over a period of fifteen years. Westshore Terminals Ltd., a subsidiary of Kaiser Resources Ltd., operates the terminal, leasing it from the National Harbours Board-Port of Vancouver.

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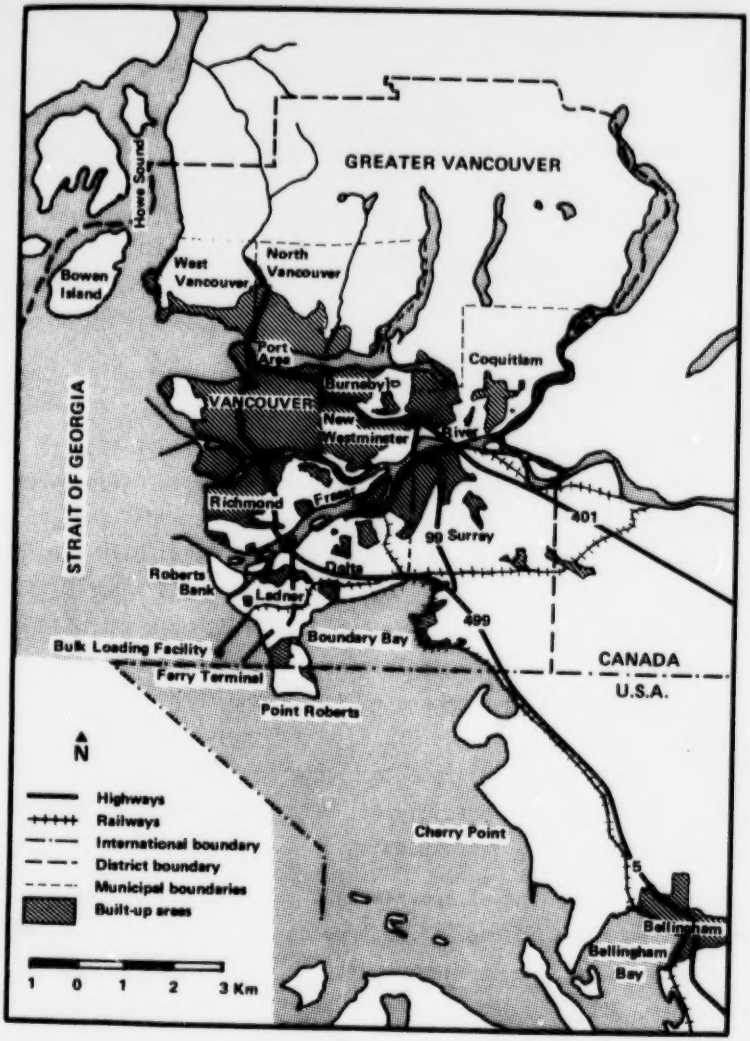
[7] More detailed discussion of the Roberts Bank controversy may be found in the following: National Harbours Board, Port of Vancouver, Environmental Impact Assessment of Roberts Bank Port Expansion (Beak-Hinton Consultants, Vancouver, October 1977). Environmental Assessment Panel, A Statement of deficiencies in the Environmental Impact Assessment of the Roberts Bank port expansion (Ottawa: FEARO, February 1978). National Harbours Board, Port of Vancouver, Response to "A statement of deficiencies in the Environmental Impact Assessment of the Roberts Bank Port Expansion" (Beak-Hinton Consultants, Vancouver, June 1978). Federal Environmental Assessment Review Office, Report of the Environmental Assessment Panel: Roberts Bank Port Expansion (Ottawa: FEARO, March 1979).

Figure 1

LOCATION MAP



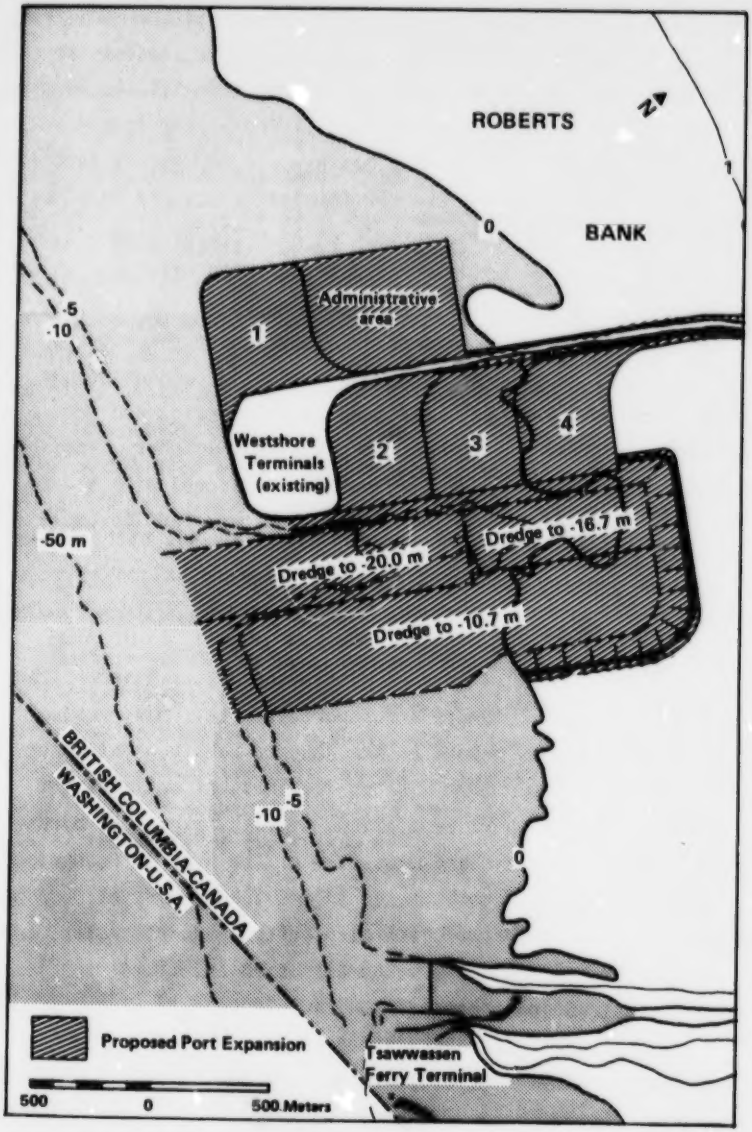
The facilities at Roberts Bank are designed to handle ships of up to 150,000 dead-weight tons. Dual quadrant shiploaders can load both bow and stern of a vessel simultaneously at a rate of 2,800 long tons an hour. The terminal also accommodates equipment for coal train unloading, two 200,000 ton stockpiles of coal hauled primarily from the Kaiser Resources mine and Fording Coal mines in southeastern British Columbia, Westshore Terminal offices, and a single ship berth. Shipments of metallurgical and thermal coal from Roberts Bank and Burrard Inlet increased by 15.2 per cent to 14 426 000 metric tonnes in 1978, from 12 516 000 metric tonnes in 1977. Westshore Terminals are now operating at, or close to, capacity.

In keeping with its envisioned goal of developing Roberts Bank into a superport, the National Harbours Board initiated, in 1973, the second phase of its overall development plan (Figure 2). This was seen as the second of several progressive stages to be completed over the next decades, and was proposed to meet the future needs of west coast bulk terminal operations, and regional demand for exports and imports. The National Harbours Board recognized that with new thermal coal developments being proposed in Alberta, and with increasing throughputs from the expanding Kaiser and Fording mine operations, Roberts Bank must expand accordingly. The potential of the port for handling potash from Saskatchewan, as well as grain, sulphur and possibly oil, was considered to be another justification for its expansion.

The expansion of Roberts Bank, as proposed by the National Harbours Board, was to provide the port with four additional 20-hectare terminal sites, an administrative area, a larger, deeper channel for ship berthing, and a turning basin suitable for bulk carriers of the 150,000 dead-weight tonnage

Figure 2

PROPOSED PORT EXPANSION



Source: Report of the Environmental Assessment Panel.

size. New railway lines and roads to service the additional terminals would require that the 5-kilometre causeway be widened. All dredging and fill was engineered to be balanced; that is, the dredged material from the enlarged ship berthing channel and turning basin would be used as landfill in the construction of the new terminal areas and expanded causeway. In addition, an area of over 728 hectares of industrial land for secondary industries with water access was planned for the coastal area to the north of the causeway. The industrial park would be developed under the auspices of the federal government. The new facilities would include two terminals for coal, one terminal for grain, and the fourth terminal for potash, or potash and sulphur. Possible future handling of bulk liquids was envisioned with a pipeline connecting one of the berths to a tank farm to be located in the industrial park (Figure 2).

Expansion Impacts

Roberts Bank is located within the Fraser River Estuary, an ecologically delicate and important area. Many varied estuarine species depend on the Roberts Bank ecosystem for its different habitats. Extensive areas of wetlands and eelgrass beds support populations of fish, migratory birds, and mammals. The dynamic ecosystem of the area is recognized as a crucial productive system in the food chain, harbouring the simplest life forms such as plankton, invertebrates, and vegetation, through to more complex bird and mammal species. Port construction and operation, involving extensive dredging and landfill, and increasing levels of port traffic, are obviously extremely disruptive to such sensitive ecosystems as that of the Fraser Estuary. Negative environmental impacts can result in irreparable damage to the physical

environment, the plankton, benthos, and aquatic vegetation of the estuarine system. Migratory birds are affected by port development, along with air and water quality.

The local social environment which would be primarily affected by the expansion of Roberts Bank port facilities is the municipality of Delta. Urban encroachment has given rise to large residential suburbs within the rural municipality. The communities of Ladner and Tsawwassen, with a 1976 population of 12,000 and 15,000 respectively, are the major urban centres in Delta that would feel impacts from increased port activity. Although farming in the area is becoming increasingly less competitive due to high land values and land speculation associated with Vancouver's encroachment, agriculturally zoned land does support a significant rural population. Farmers, like the commercial fishermen of the Delta community, risk having their enterprises alienated by port expansion.

Another local community which stands to be affected by the further development of Roberts Bank is that of the Tsawwassen Indian Band, which occupies 280 hectares of shorefront land just south of the existing port causeway. The Band, with a population of about 60, has traditionally depended upon the natural resources of the Fraser Estuary for its livelihood.

There was no environmental assessment review process in 1978 when the existing port facilities at Roberts Bank were designed. At that time a more lax environmental screening was conducted by federal government departments with the engineering consultants designing the terminal. It is possible that if there had been a detailed environmental review process, the port may never have been developed. Since that time, however, federal procedures for environmental

assessment have been created in the form of the Federal Environmental Assessment Review Office. Thus, in early 1975, conforming to the 1973 Cabinet decision which established the Federal Environmental Assessment and Review Process, the NHB referred the Roberts Bank expansion proposal for assessment. Any federal agency undertaking a project deemed to have a potentially major adverse impact on the natural or social environment is required to have an Environmental Assessment Panel review and assess the project's possible environmental consequences. In preparation for the Environmental Assessment Panel's review of the Roberts Bank expansion proposal, the National Harbours Board contracted with the Swan Wooster Engineering Co. to prepare plans for the second stage of construction. Beak-Hinton Consultants Ltd. prepared the assessment of the environmental impacts that would result from implementing the project in a voluminous statement that cost the National Harbours Board upwards of $300,000. But despite these preparations and precautions the review process was far from easy - and resulted in a decision less than favourable to the port. It is useful, therefore, to turn to a discussion of this assessment process.

Environmental Impact Assessment

Until recently, and in the case of the initial phase of development of Roberts Bank, port growth proceeded without strict government regulations. The port industry, representing the national interest in foreign and domestic commerce, views governmental intervention as hindering port development and upsetting the competitive balance between ports. Port authorities argue that it is vital to modernize, expand, and upgrade facilities in order to remain competitive and attract new trade and commerce for the region, and for national

security. Any disruption of competitive balance causes market failure, for the growth or decline of a port depends on its ability to maintain and advance its position. Ports respond to expanding local and regional economies as well as national demands for shipping facilities, and national economic and industrial development. In this way the Port of Vancouver - National Harbours Board responded to the need for expanded facilities at Roberts Bank.

Over the past two decades, a whole new range of competing uses in the coastal zone contributed to a greater public awareness and appreciation of the coastal environment. With the National Harbours Board proposal to expand Roberts Bank by dredging new channels and a turning basin, and creating new terminal sites by landfill, there was great opposition from diverse interests placing value on the resources of the coastal zone. Other commercial and industrial developers responded in favour of the expansion of Roberts Bank.

With the kind of conflict-of-interest situation that arises as in the case of Roberts Bank, it becomes essential that some kind of governmental decision-making body intercede and reconcile the opposing factions. Under the federal Environmental Assessment and Review Process (EARP) an Environmental Assessment Panel made up of independent government and scientific representatives was formed in 1975 in order to evaluate the environmental and social impacts that could be expected to result from the Roberts Bank project. In the spring of 1976, the panel published guidelines for the National Harbours Board to follow in preparation of their Environmental Impact Statement (EIS). After commissioning Beak-Hinton Consultants Ltd. to prepare the environmental assessment, the National Harbours Board submitted a six-volume report to the EARP panel in October, 1977.

The EARP panel's review of the Roberts Bank EIS involved consideration of public viewpoints. Making available the EIS volumes to any person or organization interested in participating in the review process, the EARP panel accepted written documents commenting on the EIS and the Roberts Bank project. Using 46 submissions from the public, the panel proceeded to prepare a Statement of Deficiencies in the Environment Impact Statement, which it presented to the NHB in February, 1978. Four months later the National Harbours Board replied to the panel by submitting a documented response to the statement of deficiencies, which was also prepared by Beak-Hinton Consultants Ltd.

The next stage of the panel review consisted of six days of public hearings in Delta and in the neighbouring municipality of Richmond during the autumn of 1978. Major issues were identified and discussed by the panel, its advisors, the National Harbours Board and its consultants, and the public, represented by individuals, organizations, and representatives of private enterprise. As the final stage of the review process approached, the panel received 63 further written documents concerning the Roberts Bank project. In all, the advice of over 90 agencies, groups, and individuals was considered by the panel throughout the course of its environmental review. After consideration of the potential environmental and social impacts that would result from the expansion of Roberts Bank as it was proposed by the NHB, the panel issued a report to the then federal Minister of the Environment, Len Marchand. Upon receipt of this document of panel proceedings, conclusions and recommendations, Marchand publicly announced his approval of the panel's recommendations.

It was the decision of the EARP panel that the expansion of port facilities at Roberts Bank should not be allowed to proceed as proposed. Based on its deliberations the panel assessed that the disruptions to the ecological environment of the area by port expansion would be far too great to recommend approval of the project. The dependence of fish and wildlife species, and the salmon fishery in particular, upon the Fraser Estuary were considered major factors which make essential the preservation of the ecosystem.

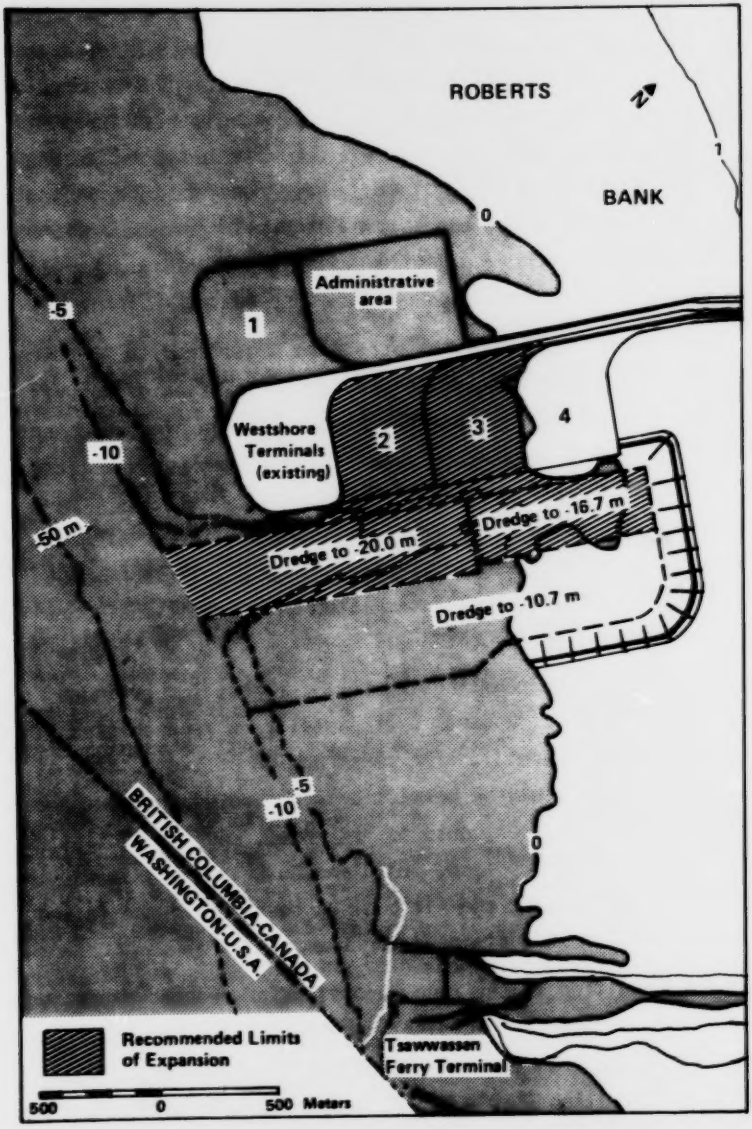
Social impact concerns were also considered to be potentially significant enough to deny full expansion of Roberts Bank. It was decided that the proposed scale of development would give rise to unacceptable problems that would affect the local communities, including the adverse effects from blowing coal dust, train traffic, increased levels of noise, and undesirable local services requirements, in short, the sort of problems that are associated with traditional port operations in urban locations.

However, the panel agreed that the need for expanded coal facilities at Roberts Bank justified a reduced expansion of the port (Figure 3). The construction of two additional terminal sites would be permitted in a part of the port area where minimal impacts could be tolerated. As for facilities to handle sulphur, potash, grain and bulk liquids, it was the panel's opinion that the National Harbours Board had failed to demonstrate adequate need for them.

In addition to the recommendation for reduced expansion, the panel issued ten technical recommendations for governmental agencies and for the NHB should they decide to proceed as permitted (Table 1), as well as nine general recommendations for measures to be followed whether or not further development occurs at Roberts Bank (Table 2).

Figure 3

RECOMMENDED LIMITS OF EXPANSION



Source: Report of the Environmental Assessment Panel.

Table 1
RECOMMENDATIONS OF THE EARP PANEL

Proposed Expansion

The proposed construction of four terminals, a widened causeway, a ship turning basin, and an administration area not be permitted.

Limited Expansion

A reduced expansion of two terminals and a slightly enlarged ship channel be permitted under the following conditions:

1) A suitable port design which avoids much erosion of habitat be tested on a hydraulic model.
2) Construction operations be scheduled in a way to best avoid disruption of subtidal and intertidal areas, and minimize impacts on fish and crabs.
3) Dust control techniques be investigated for rail cars at the port site and along the rail route.
4) An improved coal dust suppression system be installed for any new coal terminal.
5) Noise mitigation measures be identified and undertaken for trains at the port site.
6) A port design be adopted that minimizes the impact of illumination on birds.
7) A project cost-benefit analysis be undertaken which includes project-related mitigation measures and special services.
8) An agent be made available as a contact person for the public and technical agencies with regard to environmental issues during the period of port design and construction.
9) The federal Department of the Environment take responsibility for monitoring the implementation of the panel recommendations and those requirements of other governmental agencies.

Table 1 (continued)
RECOMMENDATIONS OF THE EARP PANEL

10) In advance of project commencement the following reports be prepared and submitted to the federal and British Columbia Ministers of the Environment:

a) the design of a reduced port expansion which reflects all the above physical restraints;
b) an assessment of potential social impacts and the mitigation measures required to minimize them;
c) a statement of who would be responsible for all mitigation measures and how they would be implemented;
d) a statement of how the panel recommendations will be implemented and accounted for in the project design.

Source: Report of the Environmental Assessment Panel, Roberts Bank Port Expansion, March 1979.

Table 2
GENERAL RECOMMENDATIONS OF THE EARP PANEL

Measures to be undertaken whether or not expansion takes place at Roberts Bank.

1) Hinder further coastal erosion of the existing berthing channel.

2) Prohibit the shipment of bulk liquids from Roberts Bank.

3) Prohibit bunkering of ships at Roberts Bank.

4) Prohibit the dumping of ballast water at Roberts Bank.

5) Develop an environmental emergency contingency plan for Roberts Bank.

6) Undertake further studies and quantify the impacts of coal dust pollution of air and water.

7) Reduce the potential impacts on birds from overhead wires and stanchions.

8) Backup lands owned by the B.C. Harbours Board at the Roberts Bank site be turned over to an agency with an agricultural mandate.

9) Governmental studies be carried out on the following:

   a) the function of Roberts Bank with regard to its utilization by salmonids, herring, and crabs; and in terms of food chains and habitats.
   b) the effects of the Roberts Bank and Tsawwassen ferry terminal causeways on the orientation of juvenile salmonids in their utilization of Roberts Bank and the intercauseway area.
   c) the utilization of the Roberts Bank area by migratory birds and habitat.

Source: Report of the Environmental Assessment Panel, Roberts Bank Port Expansion, March 1979.

Comments on the EARP Process

Two fundamental criticisms of EARP are frequently voiced: that it cannot always do what is expected of it and that the use of the process has serious limitations. These criticisms arose again once the Roberts Bank recommendations had been made. EARP is designed as a project-specific review process aimed at ensuring that the implications of environmental effects are considered early in the planning of federal projects and programs. However, the assessment procedures are not always capable of producing the pertinent information on ecological, economic and social impacts because the intrinsic value of these systems is not known. The EIS prepared for the National Harbours Board by Beak-Hinton Consultants Ltd. was highly criticized for its lack of new information on the Fraser Estuary ecosystem. Since the implications of environmental impacts on the Estuary remain largely unknown, the consultants were seen to have based their assessment on appreciably inadequate evidence. In turn, the EARP panel was faced with having to make decisions and recommendations in a situation of substantial uncertainty. In this way, it has been felt that EARP cannot do what is expected of it, which is to ensure the protection of the environment against negative impacts, when the process fails to produce the desired information needed for comprehensive decision-making.

Other inadequacies in the EIS that were cited to be critical of the Roberts Bank project included a full range of deficiencies judged as gaps and errors in information; a pro-development bias perceived in the representation and assessment of impacts which served to de-emphasize the value of the Fraser Estuary; an inaccurate interpretation of the panel's EIS guidelines; and an unclear commitment to accept and

implement any recommendations, requirements, and mitigation measures. Each criticism of the EIS weakened the credibility of the review process

The structuring of public hearings on the Roberts Bank port project were considered by some groups to restrict public involvement. With such complaints in mind, the panel proposed to the Minister of Fisheries and the Environment that more open sessions for general presentations be allowed in the future in order to provide a full opportunity for participation and restore public confidence in the review process. The problem of comprehensive public participation has in other cases prompted EARP panels to recommend that the federal government investigate possible funding of public interest organizations who would otherwise be unable to find the financial resources to participate effectively.

The second basic criticism of EARP suggests that there is a broad deficiency in its structure as a regulatory process. That EARP is project-specific and structured to deal with only a narrow range of issues indicates several limitations in its effectiveness as a regulatory power. As a non-statutory review process EARP does not carry the force of law; the recommendations and requirements suggested by EARP panels can be changed without the usual defence of publicity and debate. Such was the case in 1977 when EARP was amended by cabinet - the amendment to the EARP Guidebook was announced point-blank by the Department of Fisheries and Environment. Without a statutory basis the judicial enforcement of EARP fails to be responsible. Neither EARP, nor project proponents, such as the NHB, are required by law to follow the assessment and review procedures as stipulated in the Guide to EARP. While it is unlikely that a proponent will fail to

comply with assessment procedures, there remains a noteworthy degree of uncertainty in the process. Similarly, if EARP officials or panels fail to adhere to procedures, there is no judicial recourse for the proponent who may have been dealt with unfairly.

It has been suggested that the key limitations of EARP lie in its inability to investigate broader issues than those which are project specific. Although the Roberts Bank EARP panel addressed wider issues such as project justification and the consideration of alternative port sites, its primary concerns were centred on the local impacts of port development. The very nature of site-specific review processes severely limits the range of policy issues that can be reconciled.

The Pressure for Non-Urban Expansion

At first glance it would seem that two opposing factors were involved in the port development conflict over Roberts Bank, with one side supporting port interests and advocating economic development and the other dedicated to environmental preservation and protection. However, to reduce the situation to a clear-cut two-sided conflict would be careless and unexacting. That the recommendation to restrict port expansion at Roberts Bank came from the federal Ministry of the Environment does not mean that strictly environmental issues were at odds with the National Harbours Board proposal for port expansion. While the environmental concerns over port expansion of Roberts Bank were undoubtedly fundamental to the conflict, other more economic interests figure importantly in the decision-making process at EARP. The economic justification of the project came under scrutiny in terms of

the need for expanded facilities. Projections for exports of coal, sulphur, grain and bulk liquids were questioned by the EARP panel, as well as the ability of other ports to meet the future export requirement.

The National Harbours Board decision to propose that Roberts Bank port facilities be expanded was based upon a rationale that there was and will be a need for a southern B.C. bulk commodity superport. EARP guidelines required that the NHB provide an explanation of the project rationale in the EIS in order that the NHB viewpoint could be explicitly understood throughout the EARP proceedings and convenient to the panel and public review. A series of analyses were carried out for the EIS by the consultants on behalf of the NHB. Though presented as somewhat less than detailed scientific investigations, these analyses resulted in an affirmation of the NHB choice of Roberts Bank as the preferred site for bulk commodity port development and further defined the proposed project. The EIS analyses produced these general conclusions:

1) Export commodity projections to the year 2000 indicated that four port terminals would most probably be required in southern B.C. in the near future: two for coal, one for potash and sulphur, and one for grain. A bulk liquids tank farm was also deemed as desirable.

2) Analyses of environmental, social, economic, and engineering issues indicated that the site of Roberts Bank was best suited for the development of four terminals.

3) In consideration of a possible total of nine new terminals, alternative sites for port development were identified, giving preference to a partial expansion (four terminals) of Roberts Bank combined with new port construction

at Ridley Island (Prince Rupert).

4) The environmental impacts which would result from the proposed expansion of Roberts Bank were judged to be acceptable when compared to the social and economic costs that would be felt in the coal-producing areas of Western Canada if expansion was not allowed to proceed.

Sixteen different port locations were considered in the EIS as possible bulk-loading sites, resulting in the outright rejection of seven. Comparative analyses of the remaining nine sites settled on the identification of Roberts Bank, Howe Sound, Kitimat, Boundary Bay and Prince Rupert as the most realistic possibilities, with Roberts Bank ranking ahead of all sites. The basic rationale behind the choice of Roberts Bank as best site was the engineering advantages it offers, and because environmental impacts expected from its development were judged to be no greater than at the alternative sites.

The additional port facilities at Roberts Bank for the handling of sulphur, potash, grain, and bulk liquids were found to be unwarranted by the EARP panel. It was the responsibility of the NHB to demonstrate that future supply and demand for these commodities would support the scale of expansion proposed for Roberts Bank. As well as providing bulk commodity throughput projections as the basic rationale for new facilities to handle grain, sulphur, potash and bulk liquids, the EIS bolstered other pro-development arguments in favour of the Roberts Bank site. It was contended that this site would be logical for grain handling if Burrard Inlet proved to be incapable of handling future exports. It was argued that their present handling was rather ad hoc, and that larger scale handling from Roberts Bank would be more

convenient and would serve to boost their export potential. Similarly, the future development of petro-chemical industries in Alberta favoured the EIS recommendation for secure bulk liquid export facilities at Roberts Bank.

The EARP panel was not convinced by the rationale for handling grain, sulphur, potash and bulk liquids from Roberts Bank. Some of the export commodity projections were felt to be too optimistic and inaccurate. The panel also judged that the choice of Roberts Bank as the most logical site for their handling was most suspect. In the final report of the EARP panel, it was concluded that sufficient information had been provided during the review process to indicate that the existing facilities in Burrard Inlet could handle future sulphur and potash requirements. The rationale for grain handling was considered to be inadequate and it was felt that there was absolutely no need for bulk liquid accommodation. Much of the criticism against the NHB contention that new facilities were needed for bulk commodities other than coal was voiced by the operators of existing terminals handling these commodities from facilities in Burrard Inlet and elsewhere in Canada. These bulk terminals feared that if Roberts Bank was enlarged to the proposed scale they would suffer from a loss of exports, and the additional competitive pressure.

The EIS rationale for expanded coal facilities was more convincing. Although absolute future coal requirements could not be agreed upon, it was conceded by the EARP panel that additional coal facilities will indeed by needed, and that the EIS demonstration of this need could be defended. In deciding to allow the construction of two coal terminals at Roberts Bank, the EARP panel vindicated both the economic and

environmental rationales; the necessary coal facilities would be permitted where best tolerated by the environment, subject to stringent requirements and measures aimed at protecting the social and ecological environment.

Support for the NHB port expansion proposal by other interests was largely based upon cases for economic justification of the project. Some of the coal-producing East Kootenay communities upheld the opinion that increased production of coal warranted the expansion of West Coast coal facilities, and that if expansion of Roberts Bank was denied, the region would suffer negative economic impacts. Labour organizations and sections of the coal industry likewise viewed the NHB proposal as justified. There were also segments of the sulphur industry which sought new sulphur facilities at Roberts Bank in hopes of benefiting from increased competition between the Vancouver area terminals.

Perhaps the most pertinent economic argument in favour of port expansion was one which warned of a loss to Western Canada of potential export business worth billions of dollars if British Columbia failed to build new facilities at Roberts Bank. The port authorities and their supporters maintained that their bulk commodity forecasts were representative of market demands, and that it is crucial for ports to expand in response to market pressure. Lost export opportunities cannot benefit the Canadian economy and balance of payments, nor enhance job opportunities and economic well-being. Responsive port development, on the other hand, supports the national interest in foreign and domestic commerce. Hence, it was the view of the NHB port authorities in Vancouver, and some related industries, that the proposal to expand Roberts Bank was justified by the demands of expanding

economies in Western Canada, the demands of overseas markets, and the demands of industries for expanded bulk facilities. However, conflicting opinions expressed during the environmental review process gave evidence of major disparities between the NHB projections and the judgements of other review participants, thus challenging the project rationale.

Arguments against Expansion

In contrast to the NHB emphasis of economic justification of the Roberts Bank project the EARP panel combined its concern over project economies with the wider question of social and environmental impacts. Two approaches to project economics were addressed by the panel: export trade-related issues and implications, and the cost/benefit impacts of the project. The latter interest in economic impacts was directed more to the different levels of government and taxpayers, while the former issues related more to the NHB rationale for port expansion.

The expansion of Roberts Bank, be it full-scale or reduced, will result in cost impacts that are outside the jurisdiction of the port authorities. Almost all of these costs are expected to be related to mitigation measures such as the reduction of train noise and dust, the construction of rail overpasses, the provision of municipal services, or even the allocation of compensation measures to the Tsawwassen Indian Band. In its final report the EARP panel advised that the NHB take responsibility as overseer to ensure that all recommended measures are implemented by whichever agencies, and in some cases it was stipulated that certain measures must be implemented before the reduced expansion could proceed. For mitigation measures within its jurisdiction, the

NHB is required to carry them out as a condition of port development.

The other economic considerations that were reviewed by the EARP panel were those related to the project rationale. Export trade implications, alternative port site location, and regional economic impacts were only considered in terms of project justification. The lack of reliable information and projections of port throughput caused a large degree of conflict and made a consensus on potential economic impacts impossible. The NHB argued that additional capacity was needed for several bulk commodity exports, while the port authorities in Burrard Inlet, representing North Vancouver, Port Moody, and Neptune Terminals, claimed that there is sufficient capacity for these commodities in the future, and that competition between Burrard Inlet and Roberts Bank would cause them unfair economic impacts.

That port expansion will result in positive economic impacts in the coal-producing areas of Western Canada is evident, and although this point was stressed in the NHB rationale for port expansion, it could only justify the expansion of coal facilities. Most participants in the review process acknowledged the economic need for a larger West Coast coal port, but the issue of whether or not Canada should increase its export of a non-renewable natural resource, especially in the case of thermal coal needed for energy production, was debated by at least one agency.

A final economic concern of the panel and other interests was in the scale of activity that the expanded port will have to sustain to achieve self-support. If the port cannot support itself, considering all the infrastructure costs

involved, then it might be forced to add more facilities. The addition of facilities might then result in negative impacts unforeseen at this point in time.

In contrast to the NHB opinion that "the net biological cost seems very low for the size of the development," the EARP panel assessed that the potential impacts on the Estuary would be too great to recommend approval of the proposed expansion. Generally it was felt that the potential environmental impacts were underestimated by the NHB - the EIS affirmed that if specific technical recommendations and mitigative measures were carried out during the design, construction, and operational phases of the expansion of Roberts Bank, the impacts on the physical environment would be minimal. It was asserted in the EIS that the damage to the aquatic vegetation, benthos, and plankton would not be permanent, and that their eventual restoration and recolonization would eliminate any net adverse effect on salmon and herring species, and significantly reduce the impact on waterfowl. The EIS also outlined technical measures that would alleviate problems of air and water quality, as well as buffer noise pollution.

Greater value was given to the environment by EARP with their decision to advise restriction of port development on the grounds that only a reduced expansion could minimize ecological damage and other adverse impacts. Because the Roberts Bank area is not of uniform ecological value and sensitivity, the panel judged that it was feasible to allow port expansion, subject to certain conditions, in the area where impacts would be least. These conditions of development are considered by EARP to be uncompromising and not a matter of making a trade-off between environmental damage and develop-

mental damage. Environmentalists and port authorities may disagree.

There was a general assessment among those participating in the review process that enough qualitative information is available to determine the essential ecological value of the Fraser Estuary. However, it was also agreed that insufficient quantitative data made the comprehensive assessment of impacts specific to the Roberts Bank site difficult, if not impossible. The EARP panel stressed their conviction that analyses of the Fraser Estuary ecosystem as an integrated whole should be undertaken by governments so that development projects such as the one at Roberts Bank would not have to be considered in isolation from other existing and proposed developments.

The general inadequacy of quantitative data on the interrelationships of different life forms in the Estuary become obvious during the review process and can be discerned in the major conclusions of the EARP report: It was advised that any physical changes to the inter-causeway area should first be tested on a hydraulic model in order to forecast impacts more accurately; the value of eelgrass beds on Roberts Bank to the overall quality of habitat was recognized, but their importance to the salmon fisheries was less understood - thus, the effects of eelgrass destruction by dredging and landfill could not be fully assessed; without the evidence of a quantitative evaluation of the importance of benthic organisms to the food supply of fish, the panel could only "accept a reasonable assertion" that the benthos constitute a vital food source for fish and wildlife, and that these organisms and the habitat must therefore be protected.

Much attention was also given to air and water quality issues and noise considerations during the EARP proceedings, and subsequently in the EARP report. The assessment of these environmental issues, along with the social impact considerations, formed the basis for the final recommendations of the Minister of the Environment, and the decision to oppose the expansion of port facilities as proposed by the NHB. Perhaps the strongest criticism of the EIS was in respect to the analysis of social impacts. The NHB assessment of potential social consequences was found to be unreliable and quite unsatisfactory. However, significant public response throughout the review process conveyed a greater understanding of the social concerns and potential impacts.

Increased train traffic will have the greatest impact on the municipalities of Delta and Surrey, where the effects of coal dust and train noise will require that mitigative measures be taken. The jurisdictional responsibility for implementation of such measures is another issue which will have to be addressed more thoroughly, as is the question of identifying who should pay. The problem of increased train traffic has yet other dimensions: it will require that rail and road traffic be kept apart by grade separations to reduce traffic congestion, and this procedure will cause a financial burden on the municipal governments. Inter-governmental cost sharing mechanisms will reduce the financial impacts on the local communities, but shift the burden to all taxpayers.

Offsetting the financial benefits that the expansion of Roberts Bank will bring to Delta, are the incremental service costs that are expected to arise in relation to port demands for municipal water supply and fire services. Major capital expenditures may be necessary in order to meet additional

demands on municipal services. The Tsawwassen Indian Band lives in closest proximity to the Roberts Bank port, and will thus receive a considerable impact from blowing coal dust and noise, as well as suffer from un-specific or intangible impacts on their lifestyle and tradition. Concern for possible compensation measures aimed at fostering positive gains for the Band was expressed by the EARP panel. Farming communities in the Roberts Bank area will be affected by train traffic at road crossings and will face problems associated with blowing coal dust. Another concern of the farming community is the effect of rising land prices on agricultural viability and preservation of rural land.

It might be noted that although a real conflict exists between the development of Roberts Bank as a superport, and its potential for recreational use, little attention was given to this issue during the environmental review. It was acknowledged that crab fishing would be restricted from the inter-causeway area, and that recreational fishing would suffer losses generally. The NHB did, however, suggest that the port design include recreational access to the causeway, as well as mitigative measures such as landscaping of the shore front. Recreational and aesthetic concerns for the area will most probably come to the forefront and be reconciled by the management plan of the Fraser Estuary Study Group.

Conclusion

What emerges from the study of the Roberts Bank port expansion conflict is a whole series of problems and issues that make port planning highly uncertain, especially in the long term. Modern-day port development cannot proceed with-

out encountering numerous conflicts that challenge the very role of port planning. Both port authorities and governments are having to respond to the challenge and accept new responsibilities in coming to terms with the problems of port development.

The coastal area around Roberts Bank is one of marked sensitivity - the unique environmental characteristics of the immediate port area are part of a larger estuarine system whose preservation is more than a local concern. Large scale port construction, involving destructive operations of channel dredging and landfill, and threats to air and water quality, comes into direct conflict with other coastal uses. The resources of Roberts Bank provide a habitat for various animal, bird, and mammal species; their dependence on the overall ecosystem necessitates standards that are restrictive to development.

In light of the conflicting demands of society that are encountered in such cases as the Roberts Bank project, port authorities and governments must find effective means to anticipate and reconcile opposing values at the planning stage. For port authorities, these mechanisms of conflict resolution represent a departure from their traditional role.

Several non-traditional port responsibilities were required of the NHB with their proposal to expand port facilities at Roberts Bank. The preparation and defence of an Environmental Impact Statement is in itself a rather recent function of port authorities. The larger process of environmental review further defined the port's role in resolving or reducing conflict situations by outlining very definite requirements ranging from environmental mitigation measures to compensate for any environmental values that are compromised,

to requirements of construction design and operation scheduling aimed at reducing negative impacts. In addition to the needs for reducing these impacts, the NHB was advised to respond to socio-economic conflicts by carrying out systematic cost-benefit analyses of the project and assume responsibility for the implementation of mitigative actions, even those outside the port's direct jurisdiction.

The exurbanization of port facilities may make a great deal of sense, as suggested in the first sections of this paper. The problem is that as soon as it is attempted the port is forced to consider the wider implications of its operations - something which it is not used to doing. It is interesting, however, that all the issues brought up during the debate over Roberts Bank are almost exactly the same as those relating to the continued urban location of the port - noise, dirt, social disruption, congestion, blocked coastlines, environmental degradation. The end result of the process may be the safeguarding of certain environmentally and socially valuable resources in the vicinity of Roberts Bank - to the detriment of resources elsewhere in the Vancouver area.

Given a complex history of the expansion project, it is not surprising that the announcement of 29 August 1980 that it would go ahead in a reduced form also included the statement that "The expansion will be in line with the principles established by the Environmental Assessment and Review Process (EARP) in its 1979 report."

A GREEN-FIELD SITE: THE CASE OF GROS-CACOUNA[8]

Excitement has been growing again in the lower St. Lawrence region, and particularly in Rivière-du-Loup. For more than eighty years, there has been promise of building a deep water port near the village of Cacouna (1976 population: 1,083), and creating the many jobs which the region has always required. Everyone has joined the fray and argued for development - Chambers of Commerce, provincial politicians, members of the federal Cabinet, and even the local curés. The age of promise is over, and the ile de Gros-Cacouna may well be about to claim its role in Canada's modern transportation system. A consortium of brave and forward-looking companies, several with the backing of public money, are proposing to use part of the Gros-Cacouna site as the southern terminal for the transportation of liquefied natural gas (LNG). The plan, known as the Arctic Pilot project, is to ship LNG from Bridport Inlet on Melville Island (in Canada's Arctic) via ice-breaking tankers, and to off-load somewhere close to southern markets - possibly Gros-Cacouna. It is no wonder that there is excitement in the region. Unfortunately, the LNG facility may not be the proverbial goose which lays the golden egg - it could very well be a different kind of goose.

Port Proposals

Perhaps he was clairvoyant, or just plain naive, for in 1897 Sir Wilfrid Laurier (the then prime minister of Canada)

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[8] This section is based on work performed by Charles Brassard.

promised that a substantial pier and harbour facility would be built at Cacouna (Figure 4). It was to service not only the bourgeoning cargo traffic along the St. Lawrence, but also the rapidly growing steamer services between the many isolated communities along the north and south shores. Sir Wilfrid was joined in later years by other illustrious prime ministers in promising a portly future for Gros-Cacouna. In 1959, for example, well-organized street demonstrations in Rivière-du-Loup led Mr. Diefenbaker to promise major developments and Mr. Pearson continued the promise in 1961. Gros-Cacouna was seen as a potential, integral part of the new St. Lawrence Seaway system, and even New Brunswick and northern Maine were interested. The federal Department of Public Works went so far as to construct a model of the Gros-Cacouna area - an area known for its deep water, virtual ice-free existence, and its desire for development.[9]

The 1960's saw several fiascos in succession. Two breakwaters and access roads were built with the Treasury Board's blessing, but the second phase (1967) was stymied by a construction strike. It had been planned to dredge a basin to a depth of 40 feet below low water and this in an area of supposed deep-water access - but the project fell through. Contracts with a potential grain shipper had to be settled by the federal Department of Transport, and a development impasse resulted.

In the 1970's, interest ebbed and flowed. Local groups pressed for a continuance of port construction on the assumption that the port would stimulate regional economic development. Governments, for once, were somewhat skeptical. A

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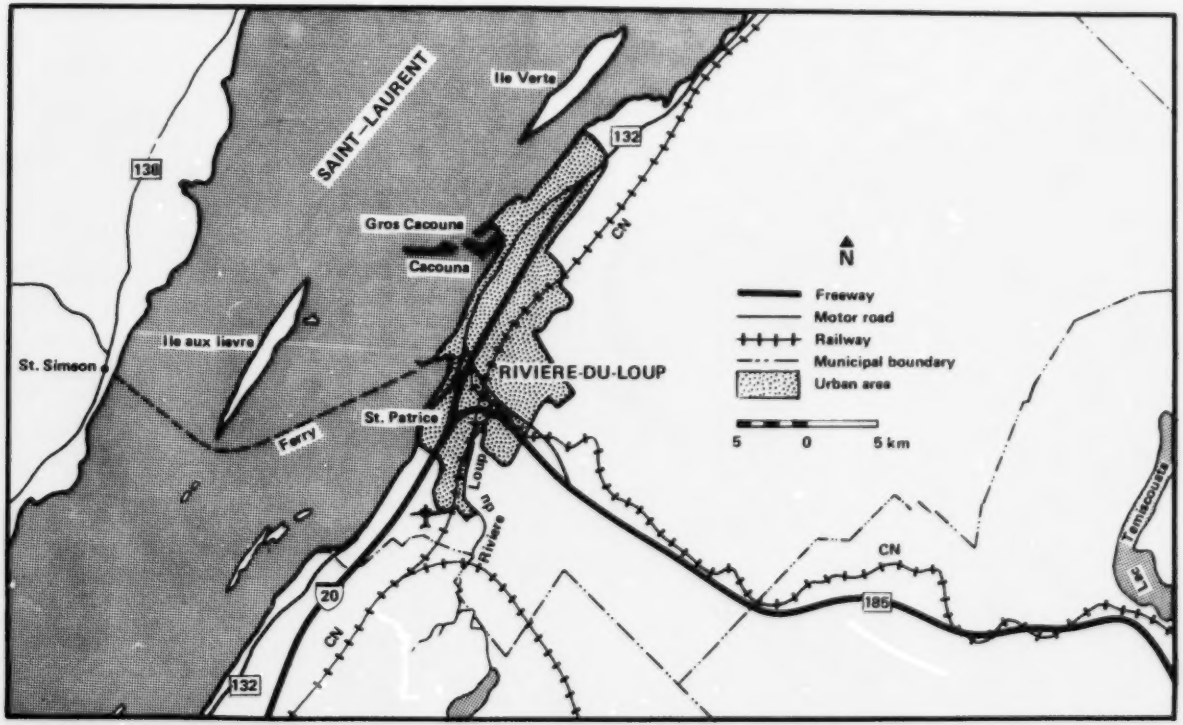
9 Gendron, R., "Le port de mer de Gros-Cacouna", Hansard, 23 April 1970.

Figure 4

RIVIERE-DU-LOUP AGGLOMERATION



Source: Gouvernement du Québec, Ministère de l'industrie et du commerce.

plan to develop a superport for oil tankers, and attendant petro-chemical plants, was eventually backed by members of the Québec government - but opposition was great. Fear of environmental pollution and insecurity of supply was such that plans were continually shelved and were eventually abandoned.[10]

In the meantime, the Misener Transportation Group had commissioned studies and come to the conclusion that Gros-Cacouna was an ideal site for bulk cargo transshipment, including grain. Despite the fate of plans for an oil port, the company persisted, and in 1975 its Québec subsidiary, Havre Champlain Inc., received provincial government support, but no funding, for a plan to spend $137 million on private facilities. The federal government was less than enthusiastic and expressed its concern for the repercussions which a new bulk cargo port would have on the other ports in the region.

Federal interest was renewed when Otto Lang replaced Jean Marchand as the Minister of Transport in 1976. While continuing negotiations with Havre Champlain for the construction of bulk facilities, the minister announced that a quay and general cargo port for purely regional purposes would be built, involving an investment of $12.5 million. Dredging and filling began in 1978, as did the construction of a dock area (Figure 5). It was also intended that shed facilities would be installed in the in-fill area.

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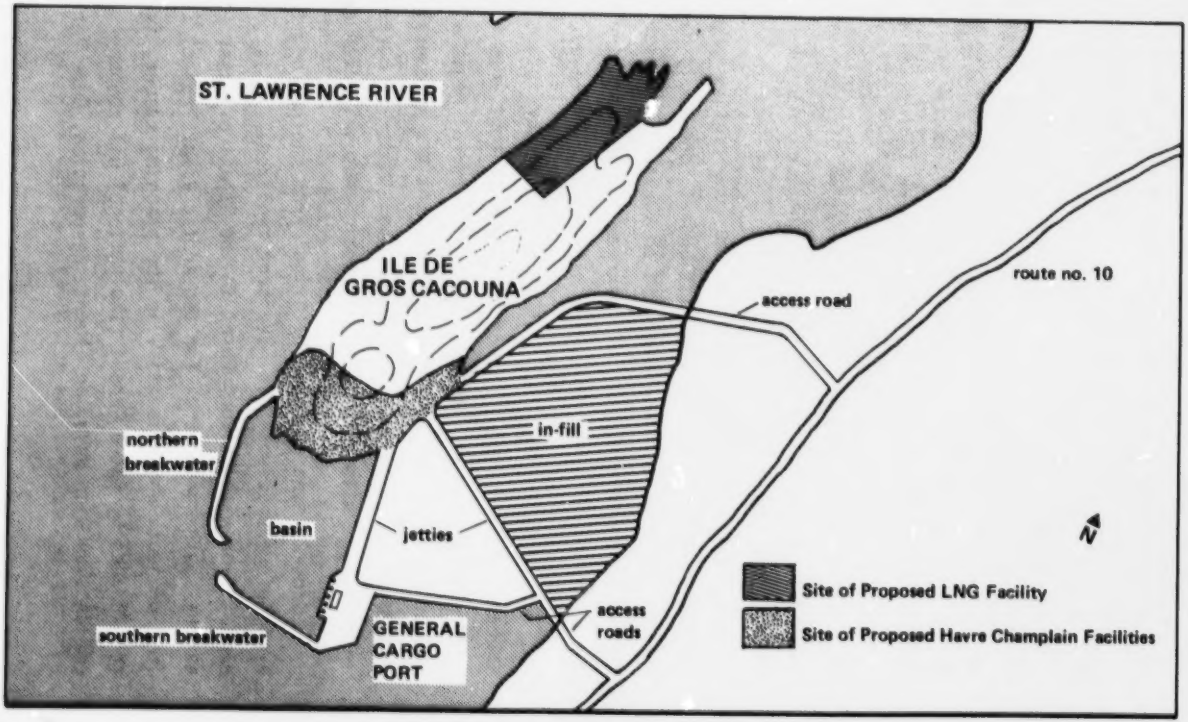
10 Déry & Associates, Port pétrolier en eau profonde, étude du choix d'un site. Report prepared for le Ministère des richesses naturelles du Québec, January 1973.

Figure 5

GROS--CACOUNA: LOCATION OF DEVELOPMENTS



But the demon of politics was at play again. During the on-going discussions with Havre Champlain and in the early stages of the construction of the general cargo port, the federal Liberal government fell. After the May election of 1979, the Conservatives formed the new government, but they agreed to continue discussions with Havre Champlain, whose proposed investment had been totally revised and expanded and had now risen to $335 million. The day that an agreement was to be signed, many luminaries, dignitaries, and just plain important people met at the Cacouna site for the ceremony. It didn't take place because the Conservative Minister of Transport was delayed in Ottawa for the debate on his government's budget, and the august group at Cacouna was left to its own devices (and little else). Since the Conservative government failed to survive the vote on its budget, one could hardly expect the Gros-Cacouna agreement to survive - it didn't. The Havre Champlain proposal returned to limbo and the later phases of the federal port were significantly delayed.

Historical momentum is anything if not persistent. The Havre Champlain facilities and the federal port area have undergone a further resurrection. The federal regional port including sheds and off-loading equipment are in operation, but Havre Champlain's plans remain just that - an agreement in principle exists but no construction has yet taken place.

Gros-Cacouna is now "suffering" from another promise, even before previous ones have been realized. It is now in competition with Melford Point in the Strait of Canso (N.S.) as the southern terminal for the Arctic Pilot Project (APP). This project, which is still in the planning stages, is spearheaded by Petro Canada (the national oil company) in conjunction with Nova, an Alberta Corporation, Dome Petro-

leum, Melville Shipping, Panarctic Oils, and TransCanada Pipelines. The regasification terminal would be composed of an unloading dock, two 100,000 m^3 storage tanks, and liquid gas vaporizers. The location on l'ile de Gros-Cacouna would be to the north of the existing federal port and the proposed Havre Champlain facilities.

The APP is dependent upon a whole variety of factors for its eventual existence. It has successfully passed the EARP process (see above) for its northern sections but requires formal definitions of the deposits at Melville Island before northern construction can begin. The problem in southern Canada is that the necessary distribution system does not exist. The Trans-Québec and Maritimes (TQM) pipeline is currently in the planning stages and construction beyond the city of Québec will not take place for some time. In some ways, Gros-Cacouna has the advantage over Melford Point (N.S.) in that the TQM pipeline will arrive at its doorstep sooner. But the decision concerning the location of the southern terminal will undoubtedly be a political one and Gros-Cacouna could well see its collective hopes dashed once more.

Expansion Impacts

Although the federal government has occasionally been cool towards port development at Gros Cacouna, it has never put a complete embargo on proceedings. Certainly, it has been concerned that hoped-for impacts might not occur, but it has not been consistent in this view. Local groups have never waivered in their belief that wider development would result from a decent port facility, and this has been largely supported by the Québec government. Indeed, in 1974 an Industrial Development Corporation was created for the

Riviére-du-Loup region with the express mandate to promote the Gros-Cacouna project. It was given three years to get the port project off the ground, a deadline which was, in retrospect, somewhat optimistic.

There seem to be two bodies of opinion concerning Gros-Cacouna. The first sees only good results flowing from the investment, and the second sees no results. It would be impossible to identify any group which sees the port development as having negative impacts. Certainly, there was concern over possible environmental damage when the possibility of a crude oil terminal and refining facilities was considered, but this was fleeting. The only hue and cry over Gros-Cacouna occurred when demonstrators lobbied in favour of development.

Thus, the federal general cargo facility and the bulk facilities proposed by Havre Champlain have never been subject to any kind of environmental impact assessment. Not only are they relatively small-scale projects, they have not been defined as having a potentially significant impact on the environment.

Gros-Cacouna can, however, boast of an environmental impact assessment - one which took place under the auspices of the Québec "bureau d'audiences publiques" and was completed in June 1981. The subject of discussion was the aforementioned Arctic Pilot Project (APP). Unlike the Roberts Bank case, where existing facilities were to be expanded to cater for existing commodities, the APP facility proposed for Gros-Cacouna is based on speculation and no firm decision regarding location. Time will tell if the public hearings process merely served to raise community expectations. But it is still useful to discuss the process and to compare

it with EARP discussed above.

Environmental Impact Assessment

The Province of Québec, along with several other provinces, has developed a system of environmental impact assessment applicable to major projects. It is the intention to apply the assessment procedures to any public or private proposals which have the potential for socio-economic or ecological upheaval. The provincial procedures are complementary to the federal EARP process, but relate to matters which do not fall directly under federal jurisdiction. As will be discussed later, certain development proposals such as Gros-Cacouna fall under both jurisdictions, and in these cases accommodations are made between the different assessing authorities.

Unlike EARP, the Québec environmental impact assessment procedures are defined in law and have a statutory basis. Two regulations pursuant to "La Loi sur la Qualité de l' environnement" (1972) outline the way in which environmental impacts are to be evaluated, and the institutional arrangements for dealing with assessments.

First is the preparation of an impact statement. Project proponents are required to submit to the minister (Environment) a statement of their project intentions. The minister then informs the proponent of the elements to be included in an environmental impact assessment, and how these should fit into guidelines developed by the Ministry of the Environment. It is then up to the proponent, and his consultants, to prepare the necessary documentation. The resulting impact statement is submitted to the minister, who has the option of requesting further information. Once this

process is completed to the minister's satisfaction, he is required to make the documents available for public comment. In recent years, the process of public participation has been greatly refined and formalised.

The coordinator and promoter of public involvement in assessing the impact statement is the newly created Bureau d'audiences publiques (public hearings office). Although the Bureau is funded by and responsible to the provincial Minister of the Environment, it has been created as a completely autonomous entity. It comprises a group of permanent commissioners who serve on the panels for each public hearing and who are joined as necessary by other expert panel members. The role of the Bureau is to disseminate information concerning the particular project being assessed, and to give local residents the opportunity to express their opinions and views. In order to do this, two public hearings are normally held. At the first meeting, the project proponent is given the opportunity to present the details of the proposal, to make arguments in its favour, and to respond to questions which may arise from the floor. At the second meeting, members of the public are allowed to submit written briefs and to present them orally. During both meetings, the panel members act both as mediators and as interrogators. On the basis of all the written and oral submissions made (including the environmental impact statement), the panel then prepares written recommendations for submission to the minister. He, in his turn, is required to make this document public after 60 days. During this time, the minister, deputy minister, and the chairman of the Bureau meet to debate the eventual decision of the minister. A final decision is only made public once it has been considered by Cabinet.

The process from initial proposal to final decision may seem long and complex, but the regulations and procedures help to assure not only consistency but also a maximum number of possibilities for public input. Several points may usefully be underlined here. First of all, the fact that the Bureau has permanent commissioners who sit (in various combinations) on different panels helps to guarantee some continuity in the hearings and deliberations. The panel can be augmented whenever necessary, but it is argued that a constant "core" helps to build up expertise. Secondly, there are time constraints on different parts of the hearing process and this helps to reduce uncertainty as to when decisions will be announced. This is not the place to make direct comparisons with EARP, but it is useful to note that some of the weaknesses of the latter are avoided in the Québec procedures. Most significant of all is the fact that the provincial mechanisms for assessment, evaluation, and public input are statutory and not just a result of a Cabinet decision.

Assessment of Gros-Cacouna

By September of 1980, the feasibility of the Arctic Pilot Project had reached a point where the potential operator of the southern terminal, Trans-Canada Pipelines, was beginning to look for sites and to file applications to develop. Gros-Cacouna had become one possibility along with, as has been mentioned, Melford Point in the Strait of Canso (N.S.). Whether because of deep environmental concern or because of the desire to make Gros-Cacouna more desirable by clearing away all potential obstacles is not certain, but in November 1980 the Québec Minister of the Environment requested the Bureau d'audiences publiques to hold public hearings on the

proposed facility. Two items were to be discussed: the construction of a loading/unloading dock, and the regasification facility.

A panel of five members was formed, including three permanent commissioners and a representative of the federal EARP office. Two public hearings were held as required. At first, it seems, there was very little public involvement. This could have been because the local community saw the LNG facility as just another in the string of broken promises. But it put the panel in a quandary since its mandate is to publicize meetings but not to act as an organiser or animator of public input. Greater interest and involvement was evident at the second hearing, as was the hope that the LNG facility would finally give rise to a certain amount of job creation in the region. While some construction employment might occur, it is very unlikely, however, that the capital-intensive facility proposed would be the major long-term economic stimulus desired. In June 1981, the minister announced a favourable decision concerning the LNG facility and associated dock, and cleared the way for possible development.

Conclusion

It will not be clear for some time, at least until the National Energy Board decision regarding APP late in 1981, whether or not Gros-Cacouna will get the installations it hopes for. Furthermore, the very existence of the provincial environmental assessment process may provide difficulties for the other proposed developments at Gros-Cacouna. The Havre Champlain bulk-loading facility was proposed and agreed on in principle before such assessments were required. Were the company now to proceed with its plans it would undoubtedly be

required, by law, to submit an impact statement and be subject to public hearings. Given the recent decision concerning the APP facility and the total lack of evidence of or concern for environmental impact, Havre Champlain would simply be faced with a rather expensive and time-consuming formality.

Very little in the way of major environmental objection has been put forward in the Gros-Cacouna case, unlike Roberts Bank. Emotions may run high in both situations, but for totally different reasons. There may be common feelings of being deceived and of being at the mercy of inaccessible corporations and government institutions, but this is because development has been proposed at Roberts Bank and because it hasn't taken place at Gros-Cacouna. The locational stability of port facilities may indeed be such that a green-field site is desirable. What the two cases show is that the choice of a particular undeveloped site may be environmentally undesirable (Roberts Bank), and that the existence of a desirable site (Gros Cacouna) is not sufficient to have port development unless economic and political conditions are right. Clearly what is needed in the case of any port development proposal is an understanding of all the key factors, both positive and negative, which need to be taken into account. These include not only the dynamics of commodity shipment but also the vagaries of the socio-economic, institutional, and physical environments.